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Effects of Formal Training on Nursing Practice in the NICU:  
Evaluation of the NICNC Program

Cynthia F. Yap

A thesis submitted in partial fulfillment of the  
requirements for the degree of

Master of Nursing

University of Washington

2003

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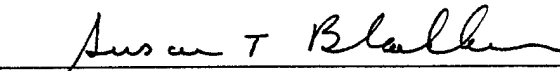
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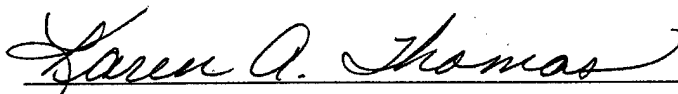
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## Chapter I

### Introduction

#### *Problem*

Many published reports have focused on the nursing work force shortage in the United States. Kimball and O'Neil (2002) associated several factors with the nursing shortage. These included (a) fewer young people in the workforce; (b) most workers being in their 40s, and likely to retire within the next ten years; (c) an increasing consumer awareness of medical malpractice; and (d) greater demands on nurses, with fewer resources. People may see nursing as too stressful, and choose to enter other career fields with more support or flexibility. Health care facilities can attract new nurses--or retain current nurses--by offering more educational opportunities (Kimball & O'Neil, 2002).

As part of a study examining the job market in 15 cities across the United States, seven focus groups met to discuss nurses' concerns. The groups found that, among other issues, "Nurses see little commitment from nursing schools and employers to adequately educate, train and orient new nurses" (Kimball & O'Neil, 2002, p. 8). Sullins (1989) made a similar observation, but added, "Our young are not only the new graduate nurses but any nurse from novice to expert who needs to be oriented" (p. 542). In the critical care setting, nurses new to the specialty require training, whether they have recently graduated, or have been working for years on a medical-surgical unit or other non-critical care setting, such as an outpatient clinic. Training can range from informal, such as

pairing an orientee with a "buddy" (Giles & Moran, 1989), to formal, which includes both didactic and clinical portions with a trained preceptor (McKane & Schumacher, 1997). One example of formal training, offered to nurses in the United States Air Force (USAF), is the Neonatal Intensive Care Nursing Course (J5OZO46N1F 000), or NICNC. This three-month course focuses on care and management of the premature or sick newborn, and combines classroom with clinical experience.

The NICNC has been offered since September 2002. Prior to its introduction, experienced nurses--with or without a neonatal intensive care unit (NICU) specialty--were only given a basic orientation to the NICU (R. M. Greer, personal communication, February 11, 2003). As this course is still new, no information has been collected to evaluate the experiences of NICNC graduates after completion of the course, or to determine if NICNC graduates provide better patient care than nurses without formal training. Such an evaluation would help determine the feasibility of continuing with this new program.

### *Purpose*

The main purposes of this thesis were to (a) examine the perceptions of NICNC graduates and their self-evaluation of their skills and knowledge; and (b) compare the graduates with nurses who had the traditional unit orientation, as perceived by the nurse managers. A secondary purpose was to develop and pilot test two questionnaires for the NICNC which addressed the issues in the main purpose. Specific questions to be addressed included the following:

1. How much time was spent on orientation to the new unit? Did orientation of NICNC graduates differ from that of other nurses?

2. How many patients did the NICNC graduate care for during a shift? How did this compare with other nurses?

3. How well did NICNC graduates manage their time, as perceived by the graduates and nurse managers?

4. How well did NICNC graduates communicate with members of the patient care team? How well did they answer patients' families' questions? How well did they plan care with the doctor? How well did they utilize outside resources?

5. How did NICNC graduates perceive their knowledge and skill levels?

6. How did nurse managers perceive the NICNC graduates' knowledge and skill levels?

## Chapter II

### Review of Literature

#### *Adult Learning*

Knowles, Holton, & Swanson (1998) developed principles of adult learning, or andragogy, based on certain assumptions. One assumption is that, as children grow to adulthood, they become more self-directed; they depend less on others for motivation. Another assumption is that adults focus more on application of the knowledge; instead of learning in order to understand themselves and the world around them--the way children do--adults need to know why learning is necessary (Knowles et al., 1998).

Adults have more life experience than children; they have developed certain attitudes or habits over the years which can make them more reluctant to change old behaviors or learn new ones (Bastable & Rinwalske, 2003). They are also preoccupied by family- or work-related issues. Despite their independence, adult learners "often really want and need structure, clear and concise specifics, and direct guidance" (Bastable & Rinwalske, 2003, p. 141).

Burgireno (1985) described several principles which would optimize adult learning. Adults learn better when knowledge can be applied to an immediate need. When learning is self-directed and voluntary, adults tend to learn more. Information should be relevant to the problem at hand, and should build on people's past experiences. Learners should be able to participate in the actual learning process. Finally, learning should be reinforced by prompt feedback (Burgireno, 1985).

Burgireno's principles can be applied to nursing orientation programs. For instance, nurses new to the critical care setting realize that they need to acquire specific knowledge and skills simply to perform their jobs; safe patient care is often motivation enough to learn. Nurses participate in their own orientation by informing their nurse manager of the skills they have already learned in order to avoid unnecessary repetition; any previous experience can be used as a foundation for future learning. Nurses sometimes recognize what areas require more training; they can complete a needs assessment form to further individualize their orientation.

#### *Benner's Novice-to-Expert*

Benner (1982) first applied the Dreyfus Model of Skill Acquisition to nursing. She described the five levels of proficiency: novice, advanced beginner, competent, proficient, and expert. Nurses at each level approach patient care and problem solving in a different way, based on prior education and experience; therefore, further education depends on level of expertise.

Novice practitioners have no experience; they must learn specific rules with respect to "objective attributes" (Benner, 1982, p. 403), such as a patient's weight, temperature, or blood pressure. Advanced beginners have enough experience to recognize "recurrent meaningful situational components, called aspects" (Benner, 1982, p. 403); they can assess, for example, a patient's readiness to learn, but cannot yet prioritize when assigned several tasks. Competent nurses usually have been working for at least two years, and can plan with long-term goals in mind; at this stage, nurses learn through

patient care simulations or hospital inservices (Benner, 1982). At the proficient level, nurses see the whole picture, and are more flexible than the competent nurses; they learn best through case studies which question their understanding of the situation. Expert nurses have such a deep understanding that they often have difficulty explaining their actions; they may simply say, "I feel that, and I know it, and I trust it" (Benner, 1982, p. 406).

Nurses who attend the NICNC are considered advanced beginners. They have at least two years of nursing experience, but are new to the NICU. They can, for example, administer a medication; but they may not know what to do initially with a baby on three different monitors, each one sounding a different alarm. For these nurses, Benner (1982) would recommend clinical support by a competent nurse, "because the advanced beginner cannot yet sort out what is most important" (p. 404). For the NICNC, competent nurses worked with students as their clinical preceptors.

#### *Evaluation of Education and Orientation Programs*

Evaluation is "a systematic process by which the worth or value of something--in this case, teaching and learning--is judged" (Worral, 2003, p. 494). There are five components within the evaluation process: (a) audience, or the people who may benefit; (b) purpose, or the reason for the evaluation; (c) questions, which relate to the purpose; (d) scope, or how much is actually evaluated; and (e) resources, which include time, personnel, and facilities (Worral, 2003). Based on these components, evaluation is often

classified into one of the following categories: process, content, outcome, impact, and program (see Figure 1).

*Process (formative) evaluation.* Process evaluation is ongoing, and is used to modify a learning activity while the activity is in progress. The instructor may ask himself or herself about allowing enough time for questions, or whether the room is too hot or too cold. This type of evaluation is useful when resources are limited (Worral, 2003).

*Content evaluation.* Examples of this type of evaluation include administering a post-test or asking for a return demonstration immediately following instruction. Content evaluation is used to examine short-term outcomes; typically, one would ask if course objectives were met. Again, limited resources would not hamper evaluation; equipment used for instruction could also be used for the return demonstration (Worral, 2003).

*Outcome (summative) evaluation.* As with content evaluation, outcome evaluation takes place after instruction is completed. However, now one would examine more long-term effects of training. For example, if a patient learned a skill in the hospital, one would ask if the patient correctly performed the skill at home. This type of evaluation relies on more resources; the learner may be called at home or may be sent a survey in the mail (Worral, 2003).

*Impact evaluation.* This type of evaluation is used to examine the effects of education on the community. While content and outcome evaluations focus on course objectives, impact evaluations focus on goals. For example, one might ask what effect a



training program has on nursing staff retention. Because of the resources needed--such as data collection instruments and personnel trained in statistical analysis--impact evaluation is used only for crucial programs, or to justify funding (Worral, 2003).

*Program evaluation.* This is an overall evaluation to examine if a program has met its original goals after a specific amount of time. Learners, teachers, members from the community, and others would all provide input; data might be collected over a period of months or years. Resources might include personnel from outside the facility (Worral, 2003).

For the purposes of this thesis, the NICNC surveys will be used as an outcome evaluation. Because the NICNC graduates have already begun working on their new units, the surveys will ask for skill evaluation away from the original learning site. Although the surveys won't focus on impact evaluation--due to their limited scope--they will ask about time on orientation and other questions not directly related to course objectives.

The following articles described various ways in which learners have evaluated education, training, or orientation programs. Learners generally evaluated either course content or changes in their own nursing abilities.

#### *Evaluation of Course Content: Were Objectives Met?*

Manias and Aitken (2003) used content evaluation to describe how registered nurses (RNs) evaluated a critical care course, using two 14-item quality-of-teaching surveys with a 5-point agreement scale; some nurses participated in focus group

interviews. Survey items included whether the nurses thought the subject was taught well, whether nurses received useful feedback, and whether the subject improved analytical skills. The authors did not specify how they recruited students for interviews, but pointed out that the interviewer was not involved with the course. Forty-eight students participated in the interviews, while two hundred returned the surveys; the surveys enabled more students to give feedback than the interviews. The authors noted that, while student evaluations supported the course, "Future research should consider the ability of this approach to impact positively on patient outcomes" (Manias & Aitken, 2003, p. 61). The authors recognized that survey responses focused on course content, rather than actual nursing performance on the job.

McKane and Schumacher (1997) focused on orientees on an adult critical care unit, referring to the nurses as advanced beginners from Benner's (1982) model; these nurses had at least one year of experience in general patient care, and were still task-oriented, much as an advanced beginner would be. Although the authors described rationales for the unit's training program--a combination of classroom and clinical experience--very little was mentioned on the evaluation of the course, or the number of surveys completed. Nurses were asked open-ended questions about their learning needs, clinical experience, and any other comments they wished to make. The authors did state, however, that all feedback would be taken seriously.

Barber-Madden and Glanz (1989) asked 25 participants of a continuing education program to complete a short, nine-item survey, using a 7-point scale, to evaluate the

program's format and how well it achieved its objectives. Participants were asked to agree or disagree with such statements as, "I learned as much from this format as from another comparable course" (Barber-Madden & Glanz, 1989, p. 130). Results showed promise, but the authors cautioned that the surveys did not assess acquisition of knowledge or skills.

Attin et al. (2002) administered a 17-item test, consisting of true-false statements, to 442 staff members at a Los Angeles medical center, both before and months after an educational program. The test was given to doctors, nurses, and respiratory therapists to evaluate knowledge of pulse oximetry. Items on the test included uses, device accuracy, and placement of probes. The mean score before the program was 66%, which increased to 82% ( $p < .01$ ) after completion of the program. However, the authors noted that some participants only completed the first test, while some only completed the second (Attin et al., 2002).

#### *Nursing Self-Evaluation: Was Anything Learned?*

Nurses receive tests in school and on the job to determine how much information they have retained; yet grades do not necessarily reflect a nurse's confidence in his or her abilities. Loving (1993) used grounded theory to interview 22 nursing students and recent graduates, using such open-ended questions as, "How would you describe clinical nursing judgment?" (p. 416). Based on their responses, Loving developed a theoretical model with competence validation as its core. "Competence validation is the process by which the student's identity as a competent, beginning nurse is established" (Loving, 1993, p.

417). Within this model (see Figure 2), he also described two educational contexts: evaluation and learning. In the evaluation-centered approach, instructors give answers to the students; the students become externally motivated, because their competence is seen as a course grade. In the learning-centered approach, instructors teach students to think through problems "without the explicit or implied threat of evaluation contingencies associated with the thought process" (Loving, 1993, p. 420); students then become internally motivated. Loving found that students taught in a learning-centered context developed cognitive flexibility, or the ability to process the appropriate information necessary for problem-solving (Loving, 1993).

Harri (1998) offered the Orientation to Life Questionnaire (Antonovsky, 1988)--a 13-item, 7-point-scale tool--to 706 nurse educators in Finland to determine their sense of coherence (SOC), or feeling of wellbeing and ability to handle stress; information from 477 participants was analyzed. Questions focused on perceptions or emotions: "Do you have the feeling that you don't really care about what goes on around you?" (Harri, 1998, p. 205) Although this tool did not ask nursing questions, stronger SOC was associated with a higher self-evaluation of competence,  $p < .001$  (Harri, 1998, p. 208).

Lengacher and Tittle (1992) examined the impact of a critical care course on 46 undergraduate nursing students. Although the authors did not specify the type of evaluation tools used, they noted positive student responses; the course increased students' feelings of competence in critical care.

Giles and Moran (1989) used a 17-item survey with a 5-point scale to evaluate nurses' satisfaction with a new preceptor program; rated items included whether learning needs were met, and how stressful the program was. Responses came from 46 orientees who went through the traditional orientation, 69 orientees with trained preceptors, 37 staff nurses, and 14 nurse managers. Orientees expressed more satisfaction with the new program than with the previous, less formal, orientation program.

Rashotte and Thomas (2002) incorporated a needs assessment tool prior to critical care orientation. For each topic or skill--such as interpretation of heart rhythms--new nurses could record how much they knew, how much information they needed, and the preferred method of learning, whether the nurse wanted to study independently, or learn in a classroom with hands-on practice. O'Riordan, Gray, and McArthur-Rouse (2003) sent a questionnaire to 32 students four months after completing a critical care course; participants answered five open-ended and yes-no questions regarding usefulness of the skills learned, such as, "How did the course specifically help you deal with [a highly dependent] patient?" (O'Riordan et al., 2003, p. 44) Nurses reported improved practice and increased confidence; however, only 31 percent of the questionnaires were returned, mainly because nurses no longer worked on the units which received the questionnaires.

Squires (2002) developed the Clinical Practice Readiness Self-Assessment Questionnaire, an 11-item survey given to nine graduate nurses at the start of orientation and every two weeks until orientation was completed, for a total of four assessments. For each item, nurses rated themselves on a scale of 1 (*very confident*) to 5 (*scared*). Items

described situations such as, "Organizing a full patient assignment appropriate to my clinical area," or, "Preparedness to provide physicians with information about their patients to assist with care decision-making" (Squires, 2002, p. 206). Mean scores dropped by the end of orientation, indicating increasing confidence; however, the author did not report statistical significance due to the small sample size.

### *Program Evaluations*

Meyer and Meyer (2000) conducted an evaluation of orientation programs on several units within an Illinois medical center. A survey with both open-ended questions and Likert scales was developed by a team consisting of staff nurses, charge nurses, and nursing directors. Respondents were asked to rate different components of the program and offer suggestions for making orientation a more positive experience. Of the 59 nurses who responded, 46 percent thought that not enough time was allotted to practice new skills. Among recommendations, the authors suggested not including preceptors and orientees in staffing hours to allow more time for teaching (Meyer & Meyer, 2000).

Straub, Mishic, and Mion (1997) conducted a program evaluation by focusing on how well learning needs were met. They evaluated the Performance Based Development System (PBDS), a tool which assessed critical thinking, interpersonal relations, and technical skills. Surveys were sent to newly-hired RNs ( $n = 59$ ), their preceptors ( $n = 58$ ), and their nurse managers ( $n = 79$ ). Of the three groups of respondents, nurse managers rated the PBDS highest in terms of usefulness; orientees rated it the lowest. Most felt that the PBDS did not reduce time on orientation. The PBDS was revised based on feedback,

but the authors did not have follow-up data at the time this particular article was written (Straub et al., 1997).

Beecroft, Kunzman, and Krozek (2001) used multiple tools to evaluate a pilot program for RN interns in pediatrics. The surveys asked interns ( $n = 50$ )--at the start of the program, and at six and twelve months afterward--and controls who did not go through the program ( $n = 28$ ) about autonomy, self-confidence, specific competencies, organizational involvement, and anticipation of turnover. All of the surveys used Likert scales. Scores from the surveys showed no statistically significant difference between the control group and interns at twelve months of employment; scores were similar despite the difference in average RN experience between the groups (8 months for the interns versus 18 months for the controls). Actual turnover for the control group was 36%, compared to 14% for the interns over the same 12-month period. The authors planned to continue evaluations into the interns' second year of employment (Beecroft et al., 2001).

#### *Nursing Evaluation in the Air Force*

Eaves and Flagg (2001) reported how the Air Force used a Simulated Medical Unit (SMU) to train five graduate nurses. Training included patient-care scenarios with mannequins, live actors, and even instructors pretending to be the physicians. Multiple evaluation methods were used, such as videotaping and performance checklists. Little was mentioned about specific evaluations at the training site. However, the nurses reported increased confidence at their new assignments, and preceptors reported that "Orientation time was cut in half most of the time" (Eaves & Flagg, 2001, p. 114).

Graduates of the Neonatal Intensive Care Nursing Course (NICNC) fill out a 22-page form which consists mainly of 5-point-scale items, evaluating course content and instructor's expertise and teaching style for each topic presented; a space for additional comments is also provided (R. M. Greer, personal communication, February 27, 2003). In addition, Air Force nurses must complete a self-assessment of clinical skills (USAF, 1986) with each new duty assignment; the form is then reviewed by the nurse manager. Training groups are even authorized to "Conduct other research or evaluation programs for the improvement of graduate or training quality" (USAF, 2002, p. 12).

#### *Implications for Development of NICNC Surveys*

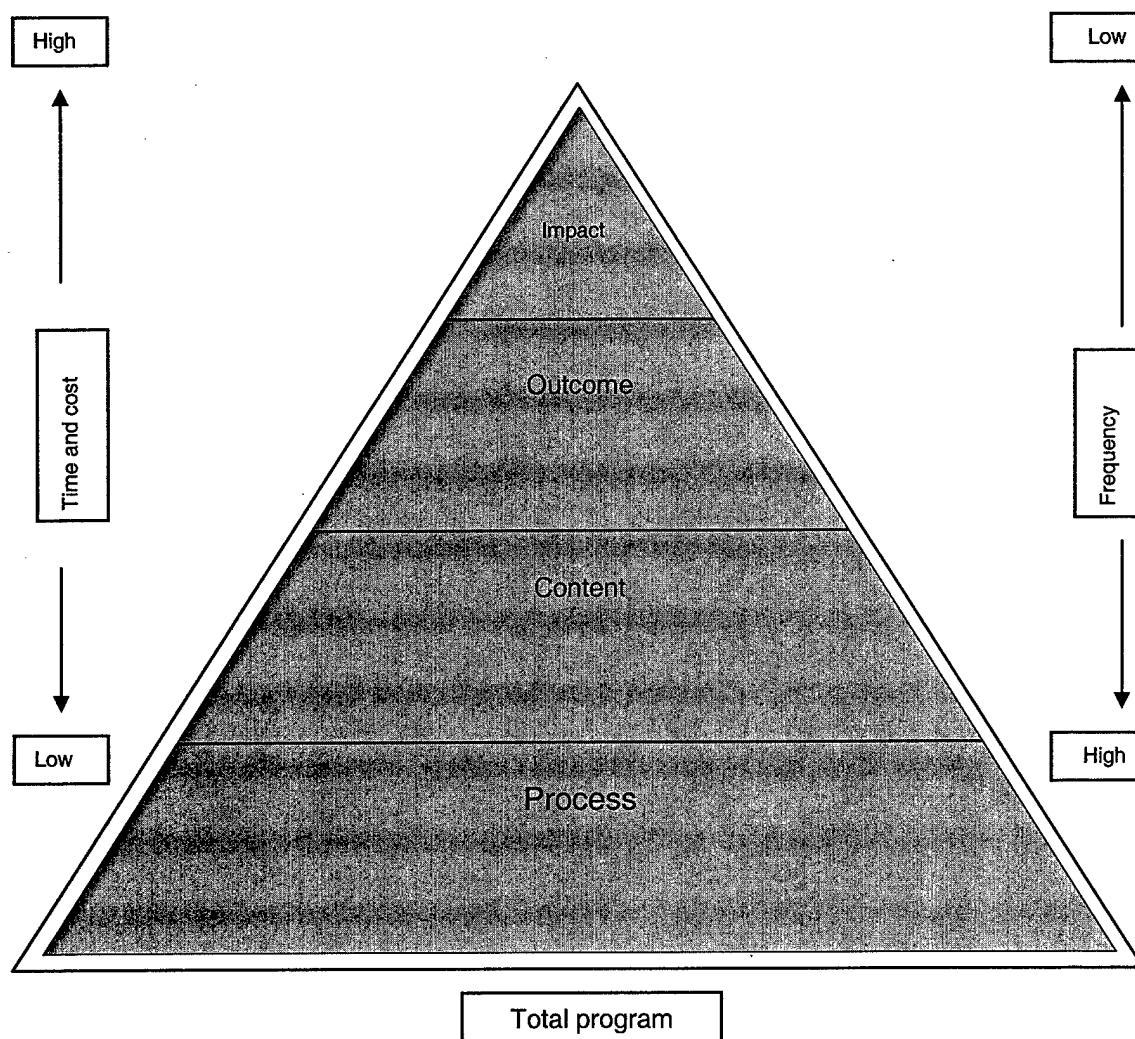
The survey used by Barber-Madden and Glanz (1989) could not be used to evaluate the NICNC because it did not examine participants' skills or knowledge. Attin et al. (2002) evaluated knowledge gained, but the questions were too specific to incorporate into the NICNC surveys. While Manias and Aitken (2003) asked students to rate how well the course improved their skills, they expressed the need for an outcome evaluation to determine if patient care actually improved. McKane and Schumacher (1997) did not specify what questions they used in their course evaluation; however, they mentioned asking nurses about learning needs, a topic which could be incorporated into the NICNC questionnaires. Another useful topic, confidence, was addressed by Squires (2002); several questions in the NICNC surveys asked about confidence or comfort in certain situations.



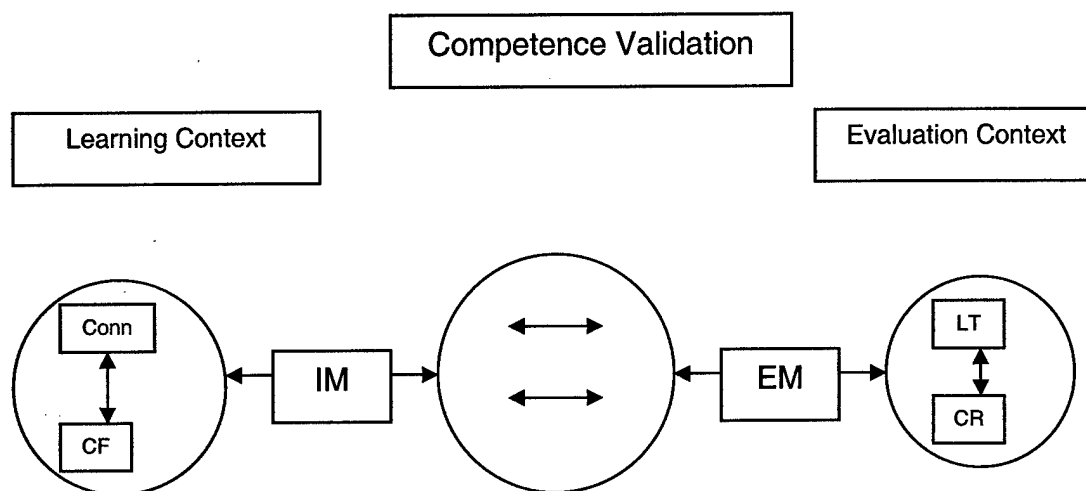
Three articles (Meyer & Meyer, 2000; Straub et al., 1997; Beecroft et al., 2001) focused on program evaluations, which could not be used for this thesis due to limited resources. However, certain aspects of the methodologies proved useful during the development of the NICNC questionnaires. Meyer and Meyer (2000) used a combination of Likert scales, which solicited specific responses that could be statistically analyzed, and open-ended questions, which gave respondents more freedom to make suggestions; both types of questions could be used to evaluate the NICNC. The needs assessment tool evaluated by Straub et al. (1997) focused on three areas: critical thinking, interpersonal relations, and technical skills. The NICNC surveys asked similar questions, focusing on skills learned in class and communication skills on the job. Beecroft et al. (2001) incorporated competency evaluation, which was also included in the NICNC surveys.

Loving (1993) used interviews and grounded theory to collect data. While his methodology was not feasible for this thesis--due to time constraints and location of subjects--similar questions were included in the NICNC surveys to evaluate problem-solving abilities; graduates' responses can reveal the presence of competence validation. Both Harri (1998) and Lengacher and Tittle (1992) asked about feelings of competence; the NICNC surveys included questions that examine whether nurses felt they could work independently. The survey used by Giles and Moran (1989) focused on nursing satisfaction; while the NICNC surveys did not specifically ask about satisfaction, several open-ended questions were included to determine what nurses liked or disliked about the course. The needs assessment tool by Rashotte and Thomas (2002) was not used in the

NICNC surveys; however, a question was included so that graduates could suggest additional topics to be covered. Of all the literature reviewed, only O'Riordan et al. (2003) attempted a long-term evaluation of their program, when nurses had worked on their new units for a few months.



*Figure 1.* Roberta Straessle Abruzzese (RSA) evaluation model. The higher levels of evaluation involve more time and greater resources; they are used less frequently than the lower levels. From *Nursing Staff Development: Strategies for Success* (p. 246), by R. S. Abruzzese, 1996, St. Louis, MO: Mosby-Year Book. Copyright 1996 by Mosby-Year Book, Incorporated. Reprinted with permission from Elsevier.



**Figure 2.** Competence validation model. CF = cognitive flexibility; Conn = connecting; CR = cognitive rigidity; EM = extrinsic motivation; IM = intrinsic motivation; LT = learning the tricks. In an evaluation context, students learn in order to receive a favorable grade or faculty approval. In a learning context, teachers help students think through problems without fear of reprisal. Neither context is mutually exclusive. From "Competence Validation and Cognitive Flexibility: A Theoretical Model Grounded in Nursing Education," by G. L. Loving, 1993, *Journal of Nursing Education*, 32, p. 417. Copyright 1993 by SLACK Incorporated. Reprinted with permission from SLACK Incorporated.

## **Chapter III**

### **Methodology**

#### *Design*

The study incorporated a cross-sectional design, which was most useful for examining several variables over a relatively short period of time. Since there was no one specific variable which measured nursing skills, a questionnaire or survey was thought to be the best tool for data collection.

#### *Sample and Setting*

The study included the five nurses who graduated from the NICNC in December 2002, and the five who graduated in March 2003, for a potential sample of ten NICNC graduates. At the time of the study, the nurses were working at six Air Force NICUs located in Germany, Okinawa, Texas, Mississippi, California, and Ohio. Subjects also included the graduates' six nurse managers, who were active-duty Air Force officers. Subjects were excluded if they no longer worked in any of the Air Force NICUs, or if they did not have access to the internet.

#### *Data Producing Instruments*

Two questionnaires were developed specifically for this study (see Appendixes A and B), based on the literature review and expert review of the NICNC program director, Lieutenant Colonel Renee Greer. To determine face validity, the questionnaires were reviewed by University of Washington neonatal nurse practitioner and neonatal clinical nurse specialist students, all of whom had at least two years of NICU experience. The

questionnaires were modified based on the students' anonymous feedback; students also reported how much time they spent answering the questions.

NICNC graduates received an e-mail message with an on-line link to one of the questionnaires (see Appendix A) which contained both closed- and open-ended questions. Demographic information was obtained, such as years of prior RN experience. The graduates were asked about orientation to their new unit, their patient load, and how their load compared with patient loads of their coworkers. The questionnaire also asked about time management skills, ability to work with others on the patient care team, and confidence when educating families. Finally, it included a follow-up evaluation of the NICNC knowledge and skills, and assessed if graduates' opinions of the course changed after working for several months.

The graduates' nurse managers were given a separate on-line questionnaire (see Appendix B). They were asked if they observed any difference between the NICNC graduates and other nurses with less than one to two years of NICU experience. They were asked about time spent on orientation, any changes in unit policies initiated by the graduates, and any concerns brought up at individual meetings. Both nurse managers and graduates also evaluated the questionnaire itself.

### *Methods of Procedure*

Initial recruitment was completed by Lt Col Greer via e-mail, and included a statement that participation in the study would be voluntary. Two subsequent e-mail messages were sent to Lt Col Greer. One contained a link to the on-line NICNC graduate

survey and was forwarded to the graduates. The other contained a link to the nurse manager survey and was forwarded to the nurse managers. The first page of both web sites included an information form (see Appendix C). The form identified the investigator by name, briefly described the purpose of the questionnaires, and discussed risks, benefits, and confidentiality. More detailed directions for completing the surveys were available on-line. Subjects answered all questions on-line (Catalyst Tools, 2002). All survey responses were sent anonymously to the investigator.

#### *Protection of Human Subjects*

Subjects answering a questionnaire risk revealing personal information or knowledge which may affect other people's perception of the subjects' abilities. For example, if a nurse admits to a patient that she needs more practice inserting an intravenous catheter, the patient may assume that the nurse is not competent. Negative responses may also reflect poorly on a unit or its nurse manager. Fear of negative perception may influence subjects' responses, thereby contributing to subject bias. Thus, any questionnaire should be administered with caution to ensure that responses are used only to improve training programs, not to evaluate personal performance.

The study information form (see Appendix C) emphasized several points: (a) participation was voluntary; (b) responses would be anonymous; and (c) a summary of the findings--but not individual data--would be shared with the NICU nurse managers and the NICNC program director. The form specified that feedback would be used to help improve the NICNC and training within each NICU. Because the surveys were

administered on-line, responses were not connected with individuals in any way.

Individual names and site locations were not identified on the surveys. The investigator did not have access to any subjects' e-mail addresses; all messages sent by the investigator were forwarded by the NICNC program director.

Written approval for use of the questionnaires was obtained from the program director of the NICNC. A human subjects application, University of Washington Form #13-11, was submitted for review; approval was granted for the above procedure.

#### *Methods of Analysis*

Responses to open-ended questions were reported, along with any recurring themes. In the NICNC graduate surveys (see Appendix A), data were collected for possible confounding variables such as years of nursing experience, years of obstetrical nursing experience, and years of prior NICU experience. Due to the small sample size, descriptive statistics was used.

The nurse manager surveys (see Appendix B) collected some of the same data as the NICNC graduate surveys, including patient load, time management, and confidence in dealing with patients' families. The nurse managers were asked to compare the graduates' skills to those of other new nurses on a Likert scale ranging from 1 (*significantly less able*) to 5 (*significantly more able*).

Both surveys asked subjects to rate the NICNC graduates' ability to work independently in specific areas of nursing management of the neonate; NICNC graduates rated themselves, while the nurse managers rated based on their observations. The scale



ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). Again, due to the small sample size, analysis focused on descriptive statistics.

## Chapter IV

### Results

#### *NICNC Graduate Survey*

Of the ten graduates recruited, 3 (30%) completed the survey. See Table 1 for demographic data. None of the graduates had prior NICU experience. Only one had any critical care experience. None were new to the military. All had nursing experience prior to attending the NICNC. None had any personal experience with a NICU patient, such as their own children or those of friends or relatives.

All of the graduates had completed orientation at the time of the survey. Orientation averaged one to two months. There was a wide range of patient loads, anywhere from one to four neonates per shift, but were comparable to nurses who did not attend the NICNC. All of the graduates replied that they were mostly to completely comfortable utilizing resources or discussing patient care with the doctor. They usually or always completed the necessary work for their shift. One nurse was barely confident when answering family members' questions, but did not elaborate; incidentally, this nurse also had the least total nursing experience of the three. The other two nurses stated they were mostly confident when dealing with families. Another nurse sometimes received negative feedback from coworkers about the skills and knowledge gained from the NICNC, but did not specify what this feedback entailed; the other two stated they never received negative feedback.

For the Likert scales, no one answered 1 or 5. Most responses were otherwise mixed. All three ranked both the didactic and clinical experience 4 for developmental support of the premature infant. All three also gave a rank of 2 for their clinical experience in management of shock. The mean score for each respondent ranged from 2.91 to 3.47, and was not related to total years of nursing experience. For the didactic portion of the course, mean scores ranged from 2.94 to 3.70; for the clinical portion, mean scores ranged from 2.88 to 3.24. Again, higher scores were not associated with more nursing experience.

Comments about the NICNC itself were generally positive. One nurse replied that the course, its didactic portion, and its clinical portion were too short, but did not make any other comments. For another nurse, the biggest asset was being able to learn in a class setting where questions could be answered in depth. The only specific suggestion for improvement was either to decrease the amount of reading or to allow more time to complete assignments. One nurse also provided feedback on the survey itself, stating that it was not time-consuming and that questions were easy to answer.

#### *Nurse Manager Survey*

Of the six NICU nurse managers, one (17%) responded within the data collection period. Average orientation time on this particular unit was 2 months. There seemed to be a discrepancy about orientation compared to other nurses; the nurse manager replied that NICNC graduates completed orientation later than other nurses, but that those currently on orientation will finish sooner. When responding about patient load, the nurse manager

explained that, after 6 weeks, NICNC graduates tended to take care of Level II patients, while nurses with prior NICU experience can handle a full load after 4 weeks of orientation. However, the nurse manager agreed with the NICNC graduates on time management and overall confidence with utilizing resources and planning care. The nurse manager replied that nurses were somewhat confident when dealing with families and mostly comfortable dealing with doctors.

For the Likert scales, the nurse manager did not rank anything higher than a 3. The nurse manager did not answer for topics that were systems-related, such as necrotizing enterocolitis, neurological problems, renal problems, or endocrine problems. While the NICNC graduates ranked developmental support 4, the nurse manager ranked that particular topic 1. The only items ranked 3 were the didactic and clinical experiences in hypoglycemia and hyperbilirubinemia; the rest were ranked 1 or 2. When comparing NICNC graduates to other nurses, the nurse manager gave a rank of 1 or 2.

There was no feedback on the survey itself; however, the nurse manager further explained the observed differences between NICNC graduates and other nurses. Nurses with civilian training seemed better prepared than those from the NICNC. The graduates didn't seem to understand treatment rationales or expected outcomes. Also, further training on ventilator equipment was often necessary.

*Table 1.* Demographic data, NICNC graduates ( $n = 3$ ). Answers are in years, unless otherwise specified.

<i>Question</i>	<i>Minimum</i>	<i>Maximum</i>
Years non-NICU experience as RN	2	3.5
Years NICU experience prior to NICNC	0	0
Years of other critical care RN experience	0	3.5
Years obstetrical RN experience	0	0
Years of non-RN hospital experience	3 months	12.5 years
Years military nursing experience	2.5	4

## Chapter V

### Discussion

Staff nurses and their nurse managers may disagree on clinical skill ratings. Lee, Chen, and Wang (2002) administered questionnaires to 147 new graduate nurses and 126 head nurses from four nursing schools in Taiwan. The questionnaires included a skill evaluation scale with five levels: (a) *imitation*, where the person only has a general idea of what to do; (b) *manipulation*, where the person can complete the task with assistance; (c) *precision*, which is similar to Benner's (1982) *advanced beginner* level; (d) *articulation*, where the person can perform the task and adapt to changing situations; and (e) *naturalization*, where skills become almost instinctive. The same questionnaire was used to compare head nurses' expectations (HNE) with new graduates' perceptions (NGP) of skills performed at the precision level. Of the 251 skill items listed, the head nurses and graduates agreed on 76, including basic skills such as taking vital signs. For skills such as specimen collection, 60% of HNE were higher than NGP. However, for 14 skills, including tube feedings and oral medications, 60% of NGP were higher (Lee et al., 2002).

Although the surveys developed for this thesis did not ask about expectations, disparities between perceptions of the nurse manager and those of the NICNC graduates may have originated from different expectations. The nurse manager seemed accustomed to working with more experienced civilian nurses, and therefore might have expected the same proficiency from the NICNC graduates, regardless of what the specific goals of the NICNC were. Also, many of the specific topics being rated had previously been

evaluated as NICNC lecture topics; the graduates might have rated the topics based on how well they were taught, rather than on how much they understood.

### *Limitations*

Because of the small sample size, generalizations could not be made about the effectiveness of the NICNC. Statistical analysis was limited to calculating the mean and range of Likert-scale and other data. To maintain anonymity of NICNC graduates, three questions were eliminated from the original survey. One asked for the subject's age; the second asked when the subject graduated from the NICNC; the last asked if the subject was stationed overseas. The last question was originally included to determine if the added stress of living in another country would affect job performance. It was removed because only two overseas Air Force bases have NICUs; subjects could be easily identified. In addition, countless stressors in one's life can affect job performance, or even job satisfaction. Trying to account for such confounders was beyond the scope of this study.

Another limitation involved time constraints for data collection. A human subjects application had been submitted for minimal-risk review, which would have normally been approved in one or two weeks. However, approval for this project took approximately three months due to decreased staffing. Recruitment could not begin until initial review of the application.

Subjects were given only one week to complete the surveys. This week included a four-day holiday weekend. Although staff nurses are still required to work during

holidays, there was no guarantee that the NICNC graduates--or their nurse managers--would not be on vacation. Indeed, after the data collection period had ended, one of the nurse managers e-mailed the investigator asking to complete a survey. Although the additional data would have been helpful, the nurse manager would not have been anonymous, as both her name and location were included in the e-mail. Instead, a copy of Appendix B was sent, and the nurse manager was informed that, while her input could not be used for this thesis, she had the option to send her personal responses to the NICNC program director.

The surveys themselves did not include input from preceptors. Preceptors work more closely with orientees than the nurse managers do, and preceptor recommendations are taken seriously. Harper (2002) developed a 26-item questionnaire to determine if preceptors thought new employees were able to work independently and competently by the end of orientation. Of the 58 preceptors in a community hospital who were approached, 27 returned the questionnaires. Eighty-nine percent of respondents stated employees were able to work independently after orientation, yet seventy-six percent stated there was insufficient time during orientation to complete core competencies. As a result, maximum orientation time was increased from 6 to 8 weeks (Harper, 2002).

### *Implications*

Based on responses to the NICNC graduate and nurse manager surveys, it would seem that new NICU nurses feel their educational needs are being met, but nurse managers may not find the NICNC useful. Perhaps improved communication between the



nurse managers and NICNC program director may help. Managers can express their ideas of what they require from their nurses, while the program director can clarify the purpose and goals of the NICNC. Also, as mentioned previously, preceptors can provide useful information. The nurse manager survey can be modified slightly and administered to preceptors for their feedback.

As the NICNC graduates continue on their units, evaluations should also continue. It may be too early to determine the effectiveness of the NICNC in preparing nurses for their new assignments. Even within the Air Force, hospitals differ greatly; a nurse may flourish in one setting and struggle in another. Policies may not be standardized, resulting in further confusion as nurses attempt to transition from the advanced-beginner level to the competent level, a process which can take several years. In the meantime, training opportunities should be offered, as long as there is agreement on the exact needs of individuals and their units.

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## Appendix A

### Nursing Survey for Graduates of Neonatal Intensive Care Nursing Course

Directions: Please answer each question as completely as you can. For multiple-choice questions, please circle one letter which corresponds to the best response.

1. Are you currently on orientation on your unit?
  - (a) Yes.
  - (b) No. How many months did your orientation take? \_\_\_\_\_
2. On an average shift, how many patients are in your care, with you as the primary nurse? (If you are still on orientation, how many patients are assigned to you?)
  - (a) 1 to 2
  - (b) 3 to 4
  - (c) 5 or more
3. How does your current patient load compare with that of other nurses on the unit?
  - (a) My load is smaller.
  - (b) My load is about the same.
  - (c) My load is larger.
  - (d) I'm not sure. (Explain:) \_\_\_\_\_  
\_\_\_\_\_
4. What would you consider the ideal patient load for you at this time?
  - (a) My load should be decreased
  - (b) My load is ideal already
  - (c) My load should be increased
5. In general, how often do you complete all necessary work (patient care, charting, teaching, etc.) by the end of your shift? (If you are still on orientation, "necessary work" means all tasks assigned by your preceptor.)
  - (a) Always

- (b) Usually
- (c) Sometimes
- (d) Rarely
- (e) Never

6. If you answered (c), (d), or (e) in the previous question, how do you think you can improve time management?

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7. How confident are you when answering your patients' families' questions about plan of care?

- (a) Completely confident
- (b) Mostly confident
- (c) Somewhat confident
- (d) Barely confident
- (e) Not confident
- (f) Families direct their questions to the doctor or another nurse

8. If you answered (c), (d), or (e) in the previous question, what do you think would help improve your confidence?

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9. How often have coworkers given you positive feedback about the skills and knowledge you gained from the NICNC?

- (a) Always
- (b) Usually
- (c) Sometimes
- (d) Rarely
- (e) Never

10. How often have coworkers given you negative feedback about the skills and knowledge you gained from the NICNC?

- (a) Always
- (b) Usually
- (c) Sometimes
- (d) Rarely
- (e) Never

11. What specific feedback do you receive from coworkers, if any?

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12. How comfortable are you with discussing patient care with the doctor?

- (a) Completely comfortable
- (b) Mostly comfortable
- (c) Somewhat comfortable
- (d) Barely comfortable
- (e) Not comfortable

13. How comfortable are you with utilizing resources (social worker, discharge planner, etc.)?

- (a) Completely comfortable
- (b) Mostly comfortable
- (c) Somewhat comfortable
- (d) Barely comfortable
- (e) Not comfortable

Please rate each area on a scale from 1 to 5. For example, circling 1 indicates you strongly disagree, and circling 5 indicates you strongly agree.

I have received sufficient **didactic** experience from the NICNC to be able to work independently in the following areas:

	Strongly Disagree	Strongly Agree
Nursing management of unexpected	1-----2-----3-----4-----5	

conditions in the delivery room (respiratory distress, congenital anomalies, etc.)	
Nursing management of asphyxia / hypoxia (including ABG interpretation)	1-----2-----3-----4-----5
Nursing management of mechanically ventilated infant	1-----2-----3-----4-----5
Nursing management of infant with cardiac anomalies	1-----2-----3-----4-----5
Nursing management of neonatal shock	1-----2-----3-----4-----5
Nursing management of neonatal sepsis	1-----2-----3-----4-----5
Nursing management of neonatal hypoglycemia and glucose intolerance	1-----2-----3-----4-----5
Nursing management of hyperbilirubinemia	1-----2-----3-----4-----5
Nursing management of necrotizing enterocolitis (NEC)	1-----2-----3-----4-----5
Nursing management of neurological problems (seizures, intraventricular / intracranial hemorrhage)	1-----2-----3-----4-----5
Nursing management of renal problems	1-----2-----3-----4-----5
Nursing management of endocrine problems	1-----2-----3-----4-----5
Neonatal pain assessment and management	1-----2-----3-----4-----5
Management of neonate with maternal drug exposure	1-----2-----3-----4-----5
Developmental support of premature infant	1-----2-----3-----4-----5
Nutrition (parenteral and enteral)	1-----2-----3-----4-----5
Ethical issues	1-----2-----3-----4-----5

I have received sufficient **clinical** experience from the NICNC to be able to work independently in the following areas:

	Strongly Disagree	Strongly Agree
Nursing management of unexpected conditions in the delivery room (respiratory distress, congenital anomalies, etc.)	1-----2-----3-----4-----5	
Nursing management of asphyxia / hypoxia (including ABG interpretation)	1-----2-----3-----4-----5	
Nursing management of mechanically	1-----2-----3-----4-----5	



ventilated infant	
Nursing management of infant with cardiac anomalies	1-----2-----3-----4-----5
Nursing management of neonatal shock	1-----2-----3-----4-----5
Nursing management of neonatal sepsis	1-----2-----3-----4-----5
Nursing management of neonatal hypoglycemia and glucose intolerance	1-----2-----3-----4-----5
Nursing management of hyperbilirubinemia	1-----2-----3-----4-----5
Nursing management of necrotizing enterocolitis (NEC)	1-----2-----3-----4-----5
Nursing management of neurological problems (seizures, intraventricular / intracranial hemorrhage)	1-----2-----3-----4-----5
Nursing management of renal problems	1-----2-----3-----4-----5
Nursing management of endocrine problems	1-----2-----3-----4-----5
Neonatal pain assessment and management	1-----2-----3-----4-----5
Management of neonate with maternal drug exposure	1-----2-----3-----4-----5
Developmental support of premature infant	1-----2-----3-----4-----5
Nutrition (parenteral and enteral)	1-----2-----3-----4-----5
Ethical issues	1-----2-----3-----4-----5

Other factors can affect nursing practice in the NICU. Please answer the following questions as accurately as you can.

How many years of non-NICU experience have you had as a registered nurse (RN)?

\_\_\_\_\_ years

How many years of NICU experience did you have before taking the NICNC?

\_\_\_\_\_ years

How many years of other critical care RN experience have you had? \_\_\_\_\_ years

How many years of obstetrical RN experience have you had? \_\_\_\_\_ years

How many years of hospital experience have you had working in a position other than a registered nurse (such as medical technician, licensed practical nurse, hospital administrator, etc.)?

\_\_\_\_\_ years

How many years of military nursing experience have you had? \_\_\_\_\_ years

Have you had any personal experience with a NICU patient (such as your own child in the NICU, or a close friend or family member with a child in the NICU)? Yes / No

NICNC Follow-up Questions

1. Were there any topics covered during orientation to your current unit which you wished had been covered in the NICNC? Please explain:

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2. Were there any skills you learned during orientation to your current unit which you wished you had learned in the NICNC? Please explain:

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3. What did you think about the length of the course in general?

- (a) The course was too short.
- (b) The course was just right.
- (c) The course was too long.

4. What did you think about the length of the didactic portion of the course?

- (a) The didactic portion was too short.
- (b) The didactic portion was just right.
- (c) The didactic portion was too long.

5. What did you think about the length of the clinical portion of the course?

- (a) The clinical portion was too short.
- (b) The clinical portion was just right.
- (c) The clinical portion was too long.

6. How has the NICNC helped most in your transition to NICU nursing?

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7. How has the NICNC helped least in your transition to NICU nursing?

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8. What changes would strengthen the course?

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Thank you for taking the time to complete this survey. Your input is important. Were there any questions you would have added or removed from this survey? Please specify.

## Appendix B

### Nurse Manager Survey of Graduates of Neonatal Intensive Care Nursing Course

**Directions:** Please answer each question as completely as you can. For multiple-choice questions, please circle one letter which corresponds to the best response.

**\*Please note:** For questions which ask you to compare NICNC graduates with other nurses, please consider only nurses who had less than 1 to 2 years NICU experience prior to working on your unit, if possible. Your feedback is greatly appreciated.

1. On average, how many months do nurses spend on orientation on your unit?
  - (a) Less than 1 month
  - (b) 1 month
  - (c) 2 months
  - (d) 3 months
  - (e) 4 months
  - (f) More than 4 months
  - (g) Time varies greatly. Please explain: \_\_\_\_\_
2. How has orientation of the NICNC graduate(s) differed from that of other nurses on your unit?
  - (a) NICNC graduate(s) is/are still on orientation
  - (b) NICNC graduate(s) completed orientation sooner
  - (c) NICNC graduate(s) completed orientation later
  - (d) There has been no noticeable difference
3. If you answered (a) in the previous question, what do you anticipate for the NICNC graduate(s)?
  - (a) NICNC graduate(s) will finish sooner
  - (b) NICNC graduate(s) will finish later
  - (c) There will be no difference
  - (d) Other (please explain): \_\_\_\_\_

4. How do the patient loads of the NICNC graduate(s) compare with those of other nurses on the unit?
- (a) NICNC graduate(s) load is smaller.
  - (b) NICNC graduate(s) load is about the same.
  - (c) NICNC graduate(s) load is larger.
  - (d) Other (please explain:) \_\_\_\_\_
5. In general, how often do NICNC graduate(s) complete all necessary work (patient care, charting, teaching, etc.) by the end of the shift? (If still on orientation, "necessary work" means all tasks assigned by the preceptor.)
- (a) Always
  - (b) Usually
  - (c) Sometimes
  - (d) Rarely
  - (e) Never
6. In general, how confident are NICNC graduates when answering patients' families' questions about plan of care?
- (a) Completely confident
  - (b) Mostly confident
  - (c) Somewhat confident
  - (d) Barely confident
  - (e) Not confident
  - (f) Families direct their questions to the doctor or another nurse
7. In general, how comfortable are NICNC graduates with discussing patient care with the doctor?
- (a) Completely comfortable
  - (b) Mostly comfortable
  - (c) Somewhat comfortable
  - (d) Barely comfortable
  - (e) Not comfortable
8. In general, how comfortable are NICNC graduates with utilizing resources (social worker, discharge planner, etc.)?

- (a) Completely comfortable
- (b) Mostly comfortable
- (c) Somewhat comfortable
- (d) Barely comfortable
- (e) Not comfortable

9. NICNC graduates may bring suggestions for unit policy changes, based on what they have learned from the course. Has anyone brought such suggestions to your attention?

- (a) No
- (b) Yes. Please specify:

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Please rate each area on a scale from 1 to 5. For example, circling 1 indicates you strongly disagree, and circling 5 indicates you strongly agree.

The nurse(s) who graduated from the NICNC received sufficient **didactic** experience from the course to be able to work independently in the following areas:

	Strongly Disagree	Strongly Agree
Nursing management of unexpected conditions in the delivery room (respiratory distress, congenital anomalies, etc.)	1-----2-----3-----4-----5	
Nursing management of asphyxia / hypoxia (including ABG interpretation)	1-----2-----3-----4-----5	
Nursing management of mechanically ventilated infant	1-----2-----3-----4-----5	
Nursing management of infant with cardiac anomalies	1-----2-----3-----4-----5	
Nursing management of neonatal shock	1-----2-----3-----4-----5	
Nursing management of neonatal sepsis	1-----2-----3-----4-----5	
Nursing management of neonatal hypoglycemia and glucose intolerance	1-----2-----3-----4-----5	
Nursing management of hyperbilirubinemia	1-----2-----3-----4-----5	

Nursing management of necrotizing enterocolitis (NEC)	1-----2-----3-----4-----5
Nursing management of neurological problems (seizures, intraventricular / intracranial hemorrhage)	1-----2-----3-----4-----5
Nursing management of renal problems	1-----2-----3-----4-----5
Nursing management of endocrine problems	1-----2-----3-----4-----5
Neonatal pain assessment and management	1-----2-----3-----4-----5
Management of neonate with maternal drug exposure	1-----2-----3-----4-----5
Developmental support of premature infant	1-----2-----3-----4-----5
Nutrition (parenteral and enteral)	1-----2-----3-----4-----5
Ethical issues	1-----2-----3-----4-----5

The nurse(s) who graduated from the NICNC received sufficient **clinical** experience from the course to be able to work independently in the following areas:

	Strongly Disagree	Strongly Agree
Nursing management of unexpected conditions in the delivery room (respiratory distress, congenital anomalies, etc.)	1-----2-----3-----4-----5	
Nursing management of asphyxia / hypoxia (including ABG interpretation)	1-----2-----3-----4-----5	
Nursing management of mechanically ventilated infant	1-----2-----3-----4-----5	
Nursing management of infant with cardiac anomalies	1-----2-----3-----4-----5	
Nursing management of neonatal shock	1-----2-----3-----4-----5	
Nursing management of neonatal sepsis	1-----2-----3-----4-----5	
Nursing management of neonatal hypoglycemia and glucose intolerance	1-----2-----3-----4-----5	
Nursing management of hyperbilirubinemia	1-----2-----3-----4-----5	
Nursing management of necrotizing enterocolitis (NEC)	1-----2-----3-----4-----5	
Nursing management of neurological problems (seizures, intraventricular / intracranial hemorrhage)	1-----2-----3-----4-----5	

Nursing management of renal problems	1-----2-----3-----4-----5
Nursing management of endocrine problems	1-----2-----3-----4-----5
Neonatal pain assessment and management	1-----2-----3-----4-----5
Management of neonate with maternal drug exposure	1-----2-----3-----4-----5
Developmental support of premature infant	1-----2-----3-----4-----5
Nutrition (parenteral and enteral)	1-----2-----3-----4-----5
Ethical issues	1-----2-----3-----4-----5

Please compare NICNC graduates to other new nurses in each area below. For example, circling 1 indicates NICNC graduates are significantly less able to function, and circling 5 indicates NICNC graduates are significantly more able to function.

Based on the **didactic** portion of the NICNC, graduates compare to other new nurses as indicated:

	Sig. Less Able	Sig. More Able
Nursing management of unexpected conditions in the delivery room (respiratory distress, congenital anomalies, etc.)	1-----2-----3-----4-----5	
Nursing management of asphyxia / hypoxia (including ABG interpretation)	1-----2-----3-----4-----5	
Nursing management of mechanically ventilated infant	1-----2-----3-----4-----5	
Nursing management of infant with cardiac anomalies	1-----2-----3-----4-----5	
Nursing management of neonatal shock	1-----2-----3-----4-----5	
Nursing management of neonatal sepsis	1-----2-----3-----4-----5	
Nursing management of neonatal hypoglycemia and glucose intolerance	1-----2-----3-----4-----5	
Nursing management of hyperbilirubinemia	1-----2-----3-----4-----5	
Nursing management of necrotizing enterocolitis (NEC)	1-----2-----3-----4-----5	
Nursing management of neurological problems (seizures, intraventricular / intracranial hemorrhage)	1-----2-----3-----4-----5	
Nursing management of renal problems	1-----2-----3-----4-----5	



Nursing management of endocrine problems	1-----2-----3-----4-----5
Neonatal pain assessment and management	1-----2-----3-----4-----5
Management of neonate with maternal drug exposure	1-----2-----3-----4-----5
Developmental support of premature infant	1-----2-----3-----4-----5
Nutrition (parenteral and enteral)	1-----2-----3-----4-----5
Ethical issues	1-----2-----3-----4-----5

Based on the **clinical** portion of the NICNC, graduates compare to other new nurses as indicated:

	Sig. Less Able	Sig. More Able
Nursing management of unexpected conditions in the delivery room (respiratory distress, congenital anomalies, etc.)	1-----2-----3-----4-----5	
Nursing management of asphyxia / hypoxia (including ABG interpretation)	1-----2-----3-----4-----5	
Nursing management of mechanically ventilated infant	1-----2-----3-----4-----5	
Nursing management of infant with cardiac anomalies	1-----2-----3-----4-----5	
Nursing management of neonatal shock	1-----2-----3-----4-----5	
Nursing management of neonatal sepsis	1-----2-----3-----4-----5	
Nursing management of neonatal hypoglycemia and glucose intolerance	1-----2-----3-----4-----5	
Nursing management of hyperbilirubinemia	1-----2-----3-----4-----5	
Nursing management of necrotizing enterocolitis (NEC)	1-----2-----3-----4-----5	
Nursing management of neurological problems (seizures, intraventricular / intracranial hemorrhage)	1-----2-----3-----4-----5	
Nursing management of renal problems	1-----2-----3-----4-----5	
Nursing management of endocrine problems	1-----2-----3-----4-----5	
Neonatal pain assessment and management	1-----2-----3-----4-----5	
Management of neonate with maternal drug exposure	1-----2-----3-----4-----5	

Developmental support of premature infant	1-----2-----3-----4-----5
Nutrition (parenteral and enteral)	1-----2-----3-----4-----5
Ethical issues	1-----2-----3-----4-----5

NICNC Follow-up Question

Were there any topics covered during the nurses' orientation to your unit which you wished had been covered in the NICNC? Please explain:

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Thank you for taking the time to complete this survey. Your input is important. Were there any questions you would have added or removed from this survey? Please specify:

## Appendix C

### University of Washington Information Form

#### Effects of Formal Training on Nursing Practice in the NICU: Evaluation of the NICNC Program

Investigator: Cynthia F. Yap, RN, BSN, Master of Nursing student, Department of Family and Child Nursing. Telephone number (206) 934-6060; e-mail: yapc@u.washington.edu

Faculty sponsor: Susan Blackburn, PhD, FAAN, RNC, Professor, Department of Family and Child Nursing. Telephone number (206) 543-8218; e-mail: sblackbn@u.washington.edu

#### Investigator's statement

I am asking you to be in a research study. The purpose of this information form is to give you the information you will need to help you decide whether or not to be in this study. Please read the form carefully. You may ask questions about the purpose of this research, what I would ask you to do, the possible risks and benefits, your rights as a volunteer, and anything else about the research or this form that is not clear. When all of your questions have been answered, you can decide if you want to be in the study or not. This process is called "informed consent."

#### PURPOSE AND BENEFITS

I would like to examine how neonatal intensive care nursing course (NICNC) graduates evaluate their own skills and knowledge. I would also like to compare the graduates with nurses who had the traditional unit orientation, from the nurse managers' point of view. I will ask nurses to fill out an on-line survey about the NICNC and its effects on nursing practice. I will also ask NICNC graduate nurse managers to fill out an evaluation. I hope that the results of this study will help nurses who are new to the neonatal intensive care unit (NICU), and help improve the NICNC as a training program. You may not directly benefit from this study.

#### PROCEDURES

You qualify for this study if you have graduated from the NICNC prior to April 2003, or if you are currently an Air Force NICU nurse manager. If you choose to be in this study, I would like you to fill out the nurse manager survey if you are a nurse manager, or the

NICNC graduate survey if you graduated from the NICNC. The nurse graduate survey asks questions about patient load, feedback from coworkers, available resources, and experience from the NICNC related to current work experience. The nurse manager survey asks questions about NICNC graduate's patient load, confidence, and NICNC's training related to the nurse's current work experience.

Completion will take about 20 minutes. You may refuse to answer any question.

### RISKS, STRESS, OR DISCOMFORT

Some people may be concerned about revealing personal information or knowledge which may affect other people's perception of the individual's abilities. The information may possibly affect the nurse's relationship with his or her nurse manager--if in fact the nurse manager could figure out who responded to the questionnaire--or reflect poorly on the unit. This is of relatively low risk since specific findings will not be shared with the NICNC Program Director, NICNC graduates, or the nurse managers. Nor will it be known which hospitals had nurses or nurse managers who responded to the questionnaire.

### OTHER INFORMATION

Being in this study is voluntary. You can stop at any time. Whether you choose to be in this study, or choose not to be in this study, will not affect your career. Information will be anonymous; it will not be linked with your identity in any way. No one will know if you have completed the survey, or not completed the survey.

A summary of the findings--but not individual information--will be shared with the NICU nurse managers and the NICNC program director. The only persons who will have access to the individual data are my faculty sponsor (Dr. Blackburn) and me. Since participants are responding to an anonymous survey designed for research, neither of us will know names of individuals who filled out the questionnaires nor be able to link individual names to questionnaires. I will only report on the nurse manager group as a whole, and the NICNC graduate group as a whole, and destroy any individual data no later than December 15, 2003.

Feedback will be used to help improve the NICNC and training within each NICU. Also, keep in mind that recent NICNC graduates are not expected to be neonatal experts at this time. If you have any questions, you can either call or e-mail me (see the top of this form). If you have any questions about your rights as research subjects, you can call the University of Washington Human Subjects Division (206) 543-0098.

If you choose to participate, please click on "Submit." If you choose not to participate, please click on "Erase Form" and close all windows.